# NREN: IP Multicast for Seamless Support of Remote Science

*Sponsored By: NASA Research and Education Network (NREN) and
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Description:

Scientific investigations at remote locations on Earth can be tremendously enhanced by connectivity to existing networks that use standard protocols. Ready access to high quality imagery and data improves the performance of the remote teams and the quality of their results. The ability to collaborate in real time and to send and receive high fidelity images via geosynchronous satellites is illustrated with two application demonstrations that use NASA's Transportable Earth Station (TES). The real time collaboration gives field scientists access to late breaking data sets, and can give them critical awareness of the current state of events.
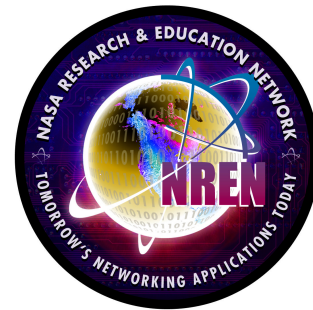
Scenario 1:

Applicable to scientific investigation field sites, experimental equipment evaluation tests, and in support of temporary collaboration with a location that has limited high-speed communications capabilities:

- Sends and receives high fidelity images using IP multicast to client systems
- Sources previously stored video content from both a server at GRC and a server located at SC2001

Scenario 2:

Environmental scientists collaborate through visual, audio, and data sharing mechanisms. The ability to immediately view and discuss the observed data while in the field assists in improving the understanding and interpretation of the data.

- Earth Observation satellite data is processed at Eros Data Center, and stored on a server at GRC.
- Collaborators discuss and view this data in real time, accessing multiple 50-80 MB files concurrently.
- The participants at SC2001 interact with other collaborators via the link provided by the TES.

www.nren.nasa.gov

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